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June 5, 2003

DTE 02-38: Investigation by the Department of Telecommunications and Energy on its own Motion into Distributed Generation

The purpose of the collaborative process was to eliminate obstacles to interconnection; however, for some segments of generation a huge obstacle has been created. The shear volume of the material is overwhelming. While a statewide standard for interconnection is a positive thing, we would like to detail the issues we feel were not adequately addressed by the Collaborative.

"Small" generators are defined by FERC as being anything in a range of 10 kW to 20 MW. For the purpose of these comments, we will use the term "mini" to refer to generation of under 300 kW. The mini induction generator is electrically harmless relative to the small (20 MW) or even mini synchronous or inverter-based system.

For some 15 years, the Massachusetts utilities, with few exceptions, have ignored these units following notification of interconnection and operation. In most cases, they never even came out to inspect the interconnection. They have also lost track of many. This long-term practice confirms our position that these systems are fully compatible, safe, and electrically harmless, having operated for millions of hours without incident. For these reasons, they should at least be treated in the same process as the 10 kW inverter (i.e. simplified). Other unnecessary requirements (i.e. visible utility accessible disconnects) should also be waived or eliminated as a standard practice.

Network Interconnection:

Interconnection on the network was left unresolved. The existing policy, which prohibits interconnection, as well as any future policies which are predicated on the "beta test site" (Williams Federal Building), literally shuts out any mini, and possibly even small, generation with parallel operation. Any potential solution for even a 75 kW cogeneration system (market value $150,000) has a utility charge starting at $100,000.

Since we were informed of the extent of the NStar network (refer to the map on the NStar web page), we temporarily avoided developing projects within that region, and were forced to cancel several contracts for a number of cogeneration units. However, we recently contracted for installation beyond the identified area and learned that this site also had a spot network, and that there are others (unidentified) scattered throughout Nstar territory. This was never revealed during the collaborative nor at a symposium recently conducted by NStar on the subject. This is like a minefield and is a major detriment to DG.

For many years during the 1980s and up to 1998, NStar's written policy permitted interconnection to the network. Massachusetts General Hospital, and perhaps other sites we are unaware of, installed several mini units in the 1980s. We have recently connected a mini to a Con Edison network in New York, which to our knowledge has an open policy.

The designated NStar network area is a major load center in Eastern Massachusetts well endowed with congestion issues. It is the ability to interconnect DG in areas of high congestion that produces the greatest benefits to the utilities and their customers by reducing the congestion, diversifying the energy generation, and providing system reliability. The DTE must get involved in this issue now if DG is expected to be part of the solution.

During Collaborative deliberations, a conc ern was continuously expressed regarding possible subsidization of DG customers by others, with very little discussion on the benefits of DG to all customers. Networks provide premium continuous service reliability to a group of customers who are charge the same rates as those on radial (less reliable) systems. These network customers always have 2 primary lines, twice the transformer capacity, double switches, protective relaying and network protectors (switches), all of which has a very costly initial investment, as well as high maintenance costs. There is a level of subsidization here that no one seems to be concerned about.

It is also evident that much of the network system is old, technologically antiquated, and perhaps its upgrade, which would readily accommodate DG interconnections, should be paid for by the utility and not the DG customers.

Indemnification:

The typical customer who utilizes mini induction generators does not do so to be in the power business. These machines are incapable of even providing backup or standby service in case of utility outages. They only provide a portion of the customer's electric load since they are sized for an economic thermal benefit usually about the FERC's qualified facility (QF) requirements.

Many of these customers are small commercial, non-profit, and public government entities. They are motivated by conservation, as recommended by government policy, and reduced operating costs.

The high capital cost of these systems is related to the highly efficient recovery and utilization of heat. They are willing to make this investment, however, they are not looking for legal "entanglements" associated with indemnification of major utilities and complex operating agreements.

Insurance:

It is inappropriate to require a 100 kW cogenerator, and in particular an induction generator, to carry the same level of insurance as a 1 MW generator. The safety and liability issues are far more extensive for the larger machine.

These customers are ongoing business entities who carry insurance to appropriately cover their needs. It is not appropriate for utilities or regulatory commissions to specify insurance coverage.

If regulation of insurance requirements is necessary, it is difficult to understand that there are no insurance requirements for inverter systems of 10 kW or less. These photovoltaics have the potential to operate independently and cause injury and/or property damage.

Disconnect Switches:

The "easily accessible to utility personnel at all times" "visible break" disconnect switch is totally unnecessary and can be a major impediment for induction generators.
It is IMPOSSIBLE with an induction generator to start up and initiate power supply or even any voltage without a utility power supply for its magnetization. Even its controls (microprocessor, contactor coil, fuel and ignition coils) need utility power to be activated. The self-excitation theory is in no way applicable to this issue.

It has been demonstrated many times that there is absolutely no danger from an induction generator to any utility personnel working on a dead line. This is why accessible disconnects have not been required by any of the utilities in the group for the past 17 years. Furthermore, at what size generator plant will the "visible break" isolation device not be required?

With hundreds of units operating for many years in various locations, not once has a utility requested access for lock out of these generators, which are equipped with OSHA-approved lockout devices, for their work during a power shutdown or outage, since these devices are always inoperable under those conditions. Thus, it represents a total waste of the customer's money.

Conclusion:

If utilization of these small, highly efficient systems is to continue, we need some sanity in these guidelines to distinguish between major megawatt power plants and small generation devices driven by automotive engines driving a generator whose operational characteristics are those of an induction motor. We can only recommend that the DTE provide this reason by including these mini induction CHP machines in the same category (simplified) as the 10 kW inverter. They provide the same environmental benefit (virtually free electricity) since they use the same fuel normally used for heating only.

Respectfully submitted,

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